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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ENGLUND, T

ART UNIT

PAPER NUMBER

2816

DATE MAILED: 02/17/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action SummaryApplication No.
09/188,241Applicant(s)
LuoExaminer
Terry L. EnglundGroup Art Unit
2816☒ Responsive to communication(s) filed on Nov 9, 1998 and Nov 18, 1999☐ This action is **FINAL**.☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims☒ Claim(s) 1-22 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.☒ Claim(s) 1-22 is/are rejected.☐ Claim(s) _____ is/are objected to.☐ Claims _____ are subject to restriction or election requirement.**Application Papers**☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.☒ The drawing(s) filed on Nov 18, 1999 is/are objected to by the Examiner.☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.☒ The specification is objected to by the Examiner.☐ The oath or declaration is objected to by the Examiner.**Priority under 35 U.S.C. § 119**☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.☐ received in Application No. (Series Code/Serial Number) _____.☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).**Attachment(s)**☒ Notice of References Cited, PTO-892☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____☐ Interview Summary, PTO-413☐ Notice of Draftsperson's Patent Drawing Review, PTO-948☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Drawings

The formal drawings were received on Nov 18, 1999. These drawings were approved by the draftsman.

However, the drawings are objected to because Fig. 3 does not show the "numbers "0.5", "1.0" and "0.5" adjacent" the transistors as page 3, lines 21-24 describe. Figs. 3, 5, 6A, 6B and 8 show signal "IS" which is described as "/S" within the specification (e.g. page 3, line 20 and page 7, line 12). It is suggested the figures, or the specification be modified to ensure consistent labeling between the figures and specification. Fig. 2 does not show "Vo" described on page 4, line 6. Corrections are required.

Specification

The abstract of the disclosure is objected to because line 2 "having" should be --has-- to help improve word flow. The phrase "The disclosed embodiment" on line 4 is implied. Therefore, it is suggested the phrase "disclosed embodiment of the" be deleted. Corrections are required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: Page 1, line 25 "c'onducting" should be --conducting--, and on line 28, the "e" should be deleted. It is believed "triod" on pages 2 (line 5) and 9 (lines 8 and 14) should be --triode--. It is believed "follows" on line 3 of page 9 should be --flows--. Page 9 does not identify what the various labels within the

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equations represent. For example, does "WLCox" represent one characteristic, or possibly three distinct characteristics (e.g. "W", "L" and "Cox")? Page 10, line 2 "node that at the output" is confusing. Was --that at the output node-- meant? Also on page 10, "chargle" on line 22 should be --charge--, and line 24 is missing in its entirety. Therefore, lines 23-25 "other types of current of a pull-up mirror path" does not make sense. Appropriate corrections are required.

Claim Rejections under 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 13-17 and 20 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Figs. 7 and 8, along with their descriptions, are confusing. The disclosure does not clearly indicate how current source 740 can be charged, which would then allow it to act as a current source for supplying/discharging current. For example, if transistor switch 730 of Fig. 8 is closed/conducting, current IO from current source 740 would flow through switch 730 and then to ground through current sink 720. When transistor switch 730 is open/nonconducting, current source 740 wouldn't receive a charging current since it would only be coupled to the input of pull-up amp 750.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-17, 21 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. It is not clear if claim 15 depends upon the proper claim since it recites "a second side" on lines 3-4 without clearly identifying a first side. Claims 16 and 17 carry over the rejection from claim 15, upon which they depend.

Claim 17 recites the limitation "said current source" in line 2. There is insufficient antecedent basis for this limitation in the claim.

The term "greatly" in claims 21 (line 9) and 22 (line 10) is a relative term which renders the claims indefinite. The term "greatly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, it is not clear in claims 21 and 22 what the applicant considers a "greatly reduced" charge injection.

Claim Rejections under 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 8-10, 12, 18, 19, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Harston. In Fig. 3 Harston shows a current source switching circuit comprising

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transistor switch MP2, and a pulling mirror path MP3 in parallel with said transistor switch MP2, anticipating claim 1. Note that MP3 is considered a mirror path since it mirrors the operation of the transistor switch MP2. See column 2, lines 64-68. The figure also shows a MOS transistor MP1 current source MP1 coupled between power source CURRENT CELL and the first side of transistor switch MP2; a load 10pf comprising a charging capacitor 10pf coupled between ground and a second side of transistor switch MP2, thus anticipating claims 2-5. Since a transistor can be deemed an amplifier, pulling mirror path MP3 can be deemed a pull-down amplifier, anticipating claim 8. When transistor MP3 is conducting, its output (i.e. drain) follows the current source MP1 side of the transistor switch MP2 by allowing the current to flow through transistor MP3, thus anticipating claim 9. Transistor MP3 can also be deemed a complementary mirror path transistor switch which operates the opposite of transistor switch MP2, anticipating claim 10. Transistor/switch MP3 provides a mirror path parallel with current switch MP2, wherein switches MP3 and MP2 are alternatively on and off, anticipating claims 18 and 19. With current source MP1 continuously supplying current through either transistor switch MP2 or mirror path switch MP3, which are operated alternatively, the charge injection from current source MP1 to load 10pF would be reduced, anticipating claim 21. Applying the same reasoning as with claim 21 and charge injection reduction, Fig. 4 of Harston shows a means providing signals DATAB and DATA which operate transistor switch MP2 and mirror path switch MP3, of Fig. 3, alternatively, thus anticipating claim 22.

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Claim Rejections under 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harston as applied to claims 1 and 10 above, and further in view of the compensated transistor switch of the applicant's Prior Art Fig. 3. Harston shows only a single transistor for each of transistor switch MP2 and complementary mirror path transistor switch MP3. It would have been obvious to one of ordinary skill in the art to replace each of the single transistors MP2 and MP3 of Harston's circuit with a respective compensated transistor switch of the applicant's Fig. 3. Transistors 302b, 304b and 306b would correspond to the first serial combination of respective first compensating, functional MOS, and second compensating transistors, wherein transistors 302a, 304a and 306a would correspond to the second serial combination of respective first complementary compensating, complementary functional MOS, and second complementary compensating transistors, thus rendering obvious claims 6, 7 and 11. As the applicant admits on page 3, lines 8-28, the use of such compensated switches are conventional/well known means for reducing charge injection of switches in analog circuits. Since Harston's circuit in Fig. 3 can be considered a current switch circuit related to an analog circuit, the compensated switch of Fig. 3 would help reduce charge injection within the circuit if that was desired.

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Claims 13-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harston as applied to claim 1 above. As described previously, Fig. 3 of Harston shows a circuit with a transistor switch MP2, pulling mirror path MP3, current source MP1, and load capacitor 10pf. However, the reference does not clearly show or disclose a pull-up amplifier as recited within claim 13. It would have been obvious to one of ordinary skill in the art to modify the circuit of Fig. 3 by reversing the polarities and transistor types. The reversal of the polarities and transistor types would provide a means for a higher output voltage. With the reversal, transistor 32 would be coupled between power source CURRENT CELL and the common connection of current source 20 and transistor switch 30. Therefore, transistor 32 could be deemed a pull-up amplifier, rendering claim 13 obvious. Current source 20 would be coupled between ground and one side of transistor switch 30, rendering obvious claim 14. Since current source 20 would be sinking current to ground, it could be deemed a current sink coupled between ground and one side of transistor switch 30, rendering claims 15 and 16 obvious. The circuit would comprise charging capacitor 10pF, coupled between power source CURRENT CELL and one side of transistor/current switch MP2/30, rendering claim 17 obvious. Deeming capacitor 10pF a current source, claim 20 is rendered obvious. It would charge up to CURRENT CELL when transistor 32 conducts, and discharge (or supply current) when transistor 30 conducts.

No claim is allowable.

The other prior art references cited on the accompanying PTO-892 are deemed relevant to at least sections of the claimed invention. Hale shows a circuit for minimizing current injection

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into a load. Lueng (Fig. 4A) and Ignowski et al. (Fig. 2) both show circuits which comprise at least a current source, transistor switch, and a mirror path switch. Therefore, those references should be carefully reviewed and considered.

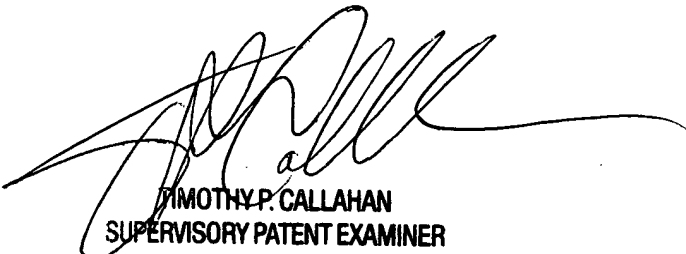
Any inquiry concerning this communication from the examiner should be directed to Terry L. Englund whose telephone number is (703) 308-4817. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (703) 308-4876. The fax phone number for this Art Unit is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.


Terry L. Englund

12 February 2000


TIMOTHY P. CALLAHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800